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AUTHOR Barrick, R. Kirby
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ABSTRACT

A historical perspective of agricultural education is needed in order to understand its role in the future. Agriculture as a science did not exist prior to the 19th century. The Morrill Act contributed greatly to this development. With the realization that higher education could serve persons interested in the agricultural and mechanical arts came a system of public institutions of higher education called the land-grant colleges. Today, agricultural science is a mainstay in the higher education system within and beyond the land-grant institutions. With the advent of baccalaureate instruction in agriculture, however, came a new struggle--the struggle between science and practice. The establishment of education as a specific discipline, a related development, is somewhat obscure. Education as a discipline is the field of study that concerns itself with the principles and methods of teaching and learning. Agricultural education as a discipline is relatively new. These premises are central to agricultural education: (1) agricultural education involves application in real settings; (2) practice is based on theory; (3) agricultural education serves as the bridge between agricultural science and the other disciplines; (4) agricultural education principles should be the foundation for education in agriculture; (5) agricultural education is not multidisciplinary; and (6) professionals in agricultural education must enter a period of self-examination to determine what agricultural education ought to be. (22 references.) (KC)

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FOREWORD

Achieving the rank of full professor in a major research university is a noteworthy accomplishment. It signifies the professional maturity of the teacher/scholar and gives the individual full rights in the academy.

Hence, when a person is promoted to professor, he or she should put forth a significant piece of scholarship for the betterment of the discipline. Thus, the Department of Agricultural Education at The Ohio State University has established a "Professorial Inaugural Lecture Series" to provide a forum in which such scholarly work can be presented. This series also is designed to provide signal recognition to the new professor.

This paper, prepared by Professor R. Kirby Barrick, Jr., is the first in the series.

— L. H. Newcomb

THE DISCIPLINE CALLED AGRICULTURAL EDUCATION

by

Professor R. Kirby Barrick
Department of Agricultural Education

Professorial Inaugural Lecture Series
The Ohio State University
October 31, 1988

THE DISCIPLINE CALLED AGRICULTURAL EDUCATION

Professor R. Kirby Barrick

The discipline called agricultural education has its roots deep in the history of education and agriculture in the United States. The purpose of today's discussion is to bring focus to the historical perspective of our discipline and to direct our thinking toward a deeper understanding of our mission. I will begin with an overview of the development of the social sciences, agriculture as a science, and education as a unique area of study. Then, I intend to spend some time reviewing the development of agricultural education and conclude with some thoughts regarding our future.

The Development of the Social Sciences

Early civilization concentrated on the development of the human mind through a study of the sciences and the humanities. In fact, the greatest teachers of early recorded history were philosophers and mathematicians. Plato, Socrates, Aristotle and Euclid are examples of educated persons from early European civilization who combined the logic of philosophy with the logic of math. Da Vinci was both a scientist and an artist. These combinations of the arts, humanities and sciences are the roots of our modern educational systems.

McCracken (1983) discussed the establishment of the academy in his 1982 Distinguished Lecture. Plato was a student of Socrates and later developed a friendship with Academus, keeping the philosophy of Socrates alive. Scholars met in the garden of Academic, which became known as the "academy" and the participants as "academicians." Aristotle, a student of Plato, helped organize the knowledge being discussed in the academy so that commoners could understand. Then, the academicians dispersed to the streets and countryside to share the knowledge. "By the 18th century, academies became societies of persons of learning who came together of their own accord for the exchange of opinions and for the fostering of knowledge" (p. 4).

As late as the 18th and 19th centuries, the social sciences began a struggle toward recognition. The perspectives of how humans think and respond to stimuli, founded in psychology, and the effects of external social stimuli, addressed through sociology, became the rudiments to later development into specific fields of study. The major lesson to be learned through this developmental process is that the human mind is complex, and that the human personality must be reckoned with beyond the simple acquisition of technical knowledge. The social sciences grew out of attempts to understand the changes in society due to

industrialization and to provide direction regarding what society ought to be (Winkler, 1988).

The Development of Agriculture as a Science

Those of us who have been involved in agriculture throughout our lives often have difficulty with the realization that agriculture, as a science that could and should be studied, did not exist prior to the 19th century. Yes, we all know that individual farmers had made great gains in farming prior to that time. George Washington reportedly practiced sound agricultural principles at Mt. Vernon and ceased tobacco production because it depleted the soil. Even as the English settlers became established here, they learned from the native Americans how to grow new crops and how to improve old ones. But the actual establishment of the study of agriculture as a science was not made until much later.

The Morrill Act contributed greatly to this development. With the realization that higher education could serve the common person interested in the agricultural and mechanical arts came a system of public institutions of higher education called the land-grant colleges. Not only did the Morrill Act provide access to higher education for more people, the fact was also established that a body of knowledge called agriculture existed and was refined to a point sufficient to warrant study at the baccalaureate level. The rest, as they say, is history. Subsequent federal legislation provided for additional colleges of agriculture to be established at the historically Black institutions, for an agricultural experiment station to be established in each state, and for a system of delivery of agricultural knowledge to the masses through an extension of the colleges.

Today, agricultural science is a mainstay in the higher education system within and beyond the land-grant colleges and universities. In fact, specific disciplines within the broad arena of agriculture have been developed. For the most part, however, we should note that those disciplines are, in effect, unique applications of existing disciplines. For example, animal science as a discipline is rooted in the biological sciences, making application of the principles of genetics, nutrition, physiology and the like to animals, just as other disciplines apply those same principles to humans or to plants.

This concept is not new. Hatch (1871) reported, "All knowledge of stockbreeding, as studied by the student, is, or ought to be, founded upon progress in physiology and anatomy; and a knowledge of zoology is very important as a foundation for progress in stockbreeding" (p. 84). That quote is from the proceedings of the Convention of Friends of Agricultural Education, the meeting of the land-grant colleges in 1871.

With the advent of baccalaureate instruction in agriculture, however, came a new struggle—the struggle between science and practice. Further quoting from the land-grant colleges proceedings of 1871, with gender-specific language not edited:

> There are a class of men who have no knowledge of abstract science, who have become, by long experience, skillful in the manipulations of the farms, and they call these practical, and they have knowledge, no doubt, of an exceedingly important part of farming. Then there are men . . . who work in the laboratory, who are skillful botanists, and who have accumulated . . . great knowledge in their departments. The so-called practical men . . . cannot do without the scientific workers . . . [and] the scientific men never could reduce their experiments, their discussions, to practice on the farm without the muscular workers. (p. 79)

With the emergence of scientific agriculture came the beginnings of a separation still seen today: the abrasiveness between science and practice. This lack of mutual admiration may also be the basis for additional disagreements I shall mention later.

Education as a Discipline

The advent of education as a specific discipline is a bit obscure. Chapman and Counts (1956) wrote that ". . . as an individual process, education . . . has existed since the appearance of the first organisms possessing the property of learning. As a social process, education has existed since organisms possessing this property first associated in groups" (p. 53).

In this country, education has evolved from being a tertiary concern of our ancestors to headline news today. Even into the 1800s, residents of the United States sent their children back to Europe to become educated, which at that time meant studying the arts and humanities. The establishment of Harvard College more than 350 years ago signaled the start of higher education in the New World, even though, at that time, Harvard was comparable to today's high school.

One of the most difficult concepts for us to grasp is that "being educated" formerly meant obtaining schooling in the arts and literature, language, and related, broadening subjects. For centuries, the concept of <u>how</u> one learns has taken a back seat to <u>what</u> one learns. The recognition of education as a unique field of study was the first major step out of medieval times.

Before proceeding, it is imperative for us to define education in more operative terms. Education is the act or process of providing knowledge, skill, competence or qualities of behavior (Gove, 1981). The phrase "being educated" no longer just describes a person who has completed study in a given area or areas, but also refers to the process of obtaining knowledge, skill, competence or behavior change. Education as a discipline is the field of study that concerns itself with the principles and methods of teaching and learning.

Like agriculture, education has its roots in previously existing disciplines. The study of how humans learn is an application of the tenets of psychology. What teachers do is the stimulus. What students do is the response to the stimulus. If we more fully understand the latter, we can alter the former to bring about the desired response. The same is true regarding the sociological perspectives of

education. Environmental attributes, such as local societal expectations, affect the response of the learner. As an example, learners from societies that expect higher achievement tend to achieve at greater rates. Principles of teaching and learning are direct applications of psychological and sociological theory.

In regard to the relationship between pedagogy and sociology, Emile Durkheim (1971) wrote, "I regard as the prime postulate of all pedagogical speculation that education is an eminently social thing in its origins as in its functions, and that, therefore, pedagogy depends on sociology more closely than any other science" (p. 91). Durkheim further wrote that ". . . it is psychology, too, that should help us with the diversity of intelligence and character. We know, unfortunately, that we are still far from the time when it will truly be in a condition to satisfy this desideratum" (p. 94).

At this juncture, let me be sure that I am clear regarding my use of the words "education," "pedagogy," and "teaching." My reference as I use these terms somewhat interchangeably includes all settings, both formal and non-formal, school-related and beyond school, where two or more people (one of whom is the teacher) are gathered in the name of learning. More commonly used terms such as high school, college, and extension, to me, fit neatly within the terms I use. With that clarifying point, let me turn to teaching in a broad sense.

Blanche Geer (1971) wrote of teaching:

> We can . . . think of teaching as an attempt to change the pupil by introducing him to new ideas. In this model teaching is an assault on the self, and resistance to it can be explained as unwillingness to upset one's inner status quo. Plausible as it may seem, the model is nevertheless limited in application. It illuminates the rare case: the pupil sufficiently aware of this power of ideas to fear and combat them, the pupil with an eager and persuasive teacher of a subject full of ideas of the kind that open new worlds of understanding self. It does not explain the much more common case of the forgetful, indifferent pupil who has a dull teacher of a dry subject. (p. 3)

In summary, teaching should be more than imparting knowledge. Conflict should arise.

Development of Agricultural Education

Swanson wrote, "There is a community of scholarship between the natural science of agriculture and the behavioral science of education. Both agriculture and education are applied sciences. The evidence of their value is their record of rewarding application" (Stevens, 1967, p. v). Although the book for which Swanson wrote those introductory comments dealt mainly with agricultural education in the public secondary schools, I believe the statement is valid for agricultural education in a broader sense. Let me elaborate.

Education, as mentioned earlier, is a field of study that concerns itself with the principles and methods of teaching and learning. Agriculture is the science or art

of the production of plants and animals useful to mankind and the preparation of these products for mankind's use and their disposal, such as through marketing (Gove, 1981). The community of scholarship between the two is agricultural education: the scientific study of the principles and methods of teaching and learning as they pertain to agriculture. It is this context I am addressing today.

Agricultural education as a discipline is relatively young. With legislation that established the study of agriculture in colleges and public schools came the need for educators who knew agriculture and the art and science of teaching. Pioneers such as Rufus Stimson (Moore, 1988) established firmly the marriage between agriculture and teaching. The extension service and the land-grant colleges promoted the teaching of agriculture within the colleges and throughout the states (True, 1929). Bricker emphasized the need for educators in agriculture and proposed agricultural education departments in 1914. His premise was that if having been raised on a farm was the only qualification to teach agriculture, then those prospective teachers should never be employed (Hillison, 1987). Unfortunately, our perception of what agricultural education is and should be has eroded over the years.

The term "agricultural education" has been used synonymously with "vocational agriculture" to the exclusion of teaching in extension and preparing teachers in college. This point has been especially vivid to me as I have tried to read about agricultural education over the past few months. Time and again, the title said "agricultural education," but the topic was "vocational agriculture." Additionally, the term "agricultural education" has been used as a collective term for all education in agriculture, encompassing plant and animal sciences, engineering, economics, and others. Both usages are in error. Agricultural education is the scientific study of the principles and methods of teaching and learning as they pertain to agriculture. As Love (1978) concluded, "Agricultural education does have a philosophy" (p. 9). That philosophical base is in the true social sciences of psychology and sociology, how humans respond to stimuli.

Premises and Prospects of Agricultural Education as a Discipline

McCracken (1983) wrote:

> It is increasingly essential that agricultural education be further developed as a profession. We need leaders in our profession who will work together in charting a new course for the future. We need intellectual discussions and debate concerning the nature of our program. . . . This intellectual discussion and debate will require of us that we become academicians and philosophers. (p. 3)

Allow me to offer these points as premises and prospects of agricultural education as a discipline.

1. Agricultural education involves application in real settings. In the public

schools, the term has evolved from farming program to supervised practice to supervised occupational experience and now, perhaps, to supervised agricultural experience. Through extension teaching, application is achieved through projects and through adoption by farmers and others. Application in real settings at the collegiate level is achieved through internships and student teaching. Across each setting, the premise is the same. Effective teaching of agricultural knowledge requires an application phase. This is unique to agricultural education. Love (1978) enumerated the difference between agricultural education and general education. In describing agricultural education, he used these terms: "Pragmatism, Analytical and Prescriptive, Knowledge Is More Temporary, Life Oriented" (pp. 4-5). Academicians in agricultural education must further define and refine these precepts.

2. Practice is based upon theory. Agricultural education is more than skill training. The basis for the application phase of teaching is sound theory. Agricultural education goes beyond the "how" to the "why." Or, in another sense, agricultural education moves the "why" to the "how." Recall the earlier point from the 1871 land-grant meeting. The "practical men" cannot do without the scientific worker, and vice versa. Although our discipline purports that learners learn more in practical situations, we must be sure that those applications are theoretically sound, as well.

3. Agricultural education serves as the bridge between agricultural science and the other disciplines. As Stanley, Smith, Benne, and Anderson (1956) related:

> In devising and developing teaching methods, the teacher will find a major opportunity not only to assist his pupils to become intelligent, self-directing personalities but also to contribute to the contemporary task of social reintegration . . . teaching methods must incorporate the values inherent in both the scientific method and the democratic point of view . . . it is not enough that the teacher be skilled in effective and valid methods of solving problems cooperatively. He must find ways of building this skill into the minds and characters of the pupils . . . . (p. 572)

Because of this unique link, agricultural education can reveal the tie between the technical area of agriculture and the humanistic disciplines. Educating the person as a human must remain the forerunner to educating the person as an agriculturalist. The social foundations of agricultural education retain that perspective. "Leaders in agricultural education must be able to synthesize technical agriculture information and plan programs to help solve the problems associated with energy, productivity, and world trends in the agricultural industry" (Shinn & Cheek, 1981, p. 8).

4. Agricultural education principles should be the foundation for education in agriculture. That is not a play upon words; here is the issue. So often, those associated with the technical agriculture disciplines have led the discussions that question the applicability and appropriateness of what we call general education requirements at the baccalaureate level. Yet those same educators insist that a

terminal degree in the discipline is adequate license for being an agricultural education professional. The Ph.D. is a research degree. Preparation in agricultural education qualifies a person to obtain and use effectively the principles and methods of teaching and learning as they pertain to agriculture. Those with expertise in the discipline of agricultural education must pave the way to ensure that educators in agriculture are well-founded in agricultural education. Recent work by Newcomb (Newcomb & Trefz, 1987) and Pickford (Pickford, 1988) shows interesting data regarding teaching in The Ohio State University College of Agriculture, as it relates to cognitive level and student achievement. Agricultural education must assume a leadership position in ensuring that educators in agriculture are agricultural educators.

5. Agricultural education is not multi-disciplinary. I was amused and then concerned by the language of the first draft from the Ohio State Special Committee for Undergraduate Curriculum Review in Agriculture. Professional support for agricultural education was listed not as a natural science (which it is not), nor as a social science (which it is), but as multi-disciplinary studies. I refer you to the opening sections of today's presentation. The arts, humanities and sciences have spawned, over time, new disciplines. Among those are the disciplines in agriculture which apply the natural sciences disciplines to unique settings and the disciplines of education and agricultural education which apply the social science disciplines. We cannot make progress in curriculum reform until we understand the connection between our discipline and the disciplines in agriculture and in the social sciences. Agricultural education is no more multi-disciplinary than any other discipline in agriculture, but it <u>is</u> multi-faceted. As McCormick (1985) noted, agricultural education has expanded beyond the initial " 'teaching' function" to include research, extension education, international education and the like. McCormick challenged the profession to examine this newly expanded role to determine whether it is appropriate. The most appropriate way to make that determination is to ensure that each facet of agricultural education can be tied to the discipline from whence we evolved.

6. Lest those of you in agricultural education, as I defined it, feel we are above reproach, let me raise a final issue. It is my belief that we in agricultural education must enter a period of self-examination which, in all likelihood, will return us to Gibraltar Island, the site of the last great reformation in the Ohio State agricultural education undergraduate curriculum. We must determine what agricultural education ought to be.

It seems to me that we have yielded again and again to external pressures to change. We have altered requirements and changed programs because some external group said we should. I am in favor of lowering our white flag of surrender and donning our red badge of courage as we re-address the basic tenets of our discipline.

For example, we tend to tear ourselves apart by labeling students and faculty as "teacher education" or "extension education" when, in fact, we are all "agricultural education." The methods and principles of teaching and learning are the same;

only the application setting differs. Shinn and Cheek (1981) wrote, "An examination of the competencies needed by beginning teachers and extension agents reveals a common core" (p. 8). It is most interesting that such an issue still exists. In 1967, O'Kelly wrote:

> Ohio State University probably pioneered (1955) in these combination agricultural and extension education programs. . . . Although all of its courses are listed as agricultural education courses, in practice separate sections at the graduate level . . . may develop. . . . In other courses no division of students occurs. At the undergraduate level practically all courses are organized and taught as combination courses. (p. 50)

During our planning conference on Gibraltar Island, we added undergraduate courses of 4-H, FFA, SOE, adult education, and others. This concept, I believe, is wrong. Our discipline is the scientific study of the principles and methods of teaching and learning. Our curriculum should reflect our discipline. Rather than teach courses on specific subjects, we should teach courses that study different principles and methods of teaching. Adult education, instructional materials, SOE, FFA, 4-H and the like are useful only as methods of teaching agriculture. As Warmbrod (1970) so clearly stated:

> Basic to effective teaching is a thorough understanding of what teaching and learning are all about. Due to some rather far-reaching changes in agricultural education during the past few years, it is crucial that the teaching of agriculture be examined in light of what we know about teaching and learning.

That 18-year-old statement is true today and will become more important in the years ahead as we address the report of the Committee on Agricultural Education in Secondary Schools. Let us determine that what we teach has as its purpose to improve the methods and principles of teaching and learning.

Summary

Former Secretary of Education William J. Bennett, paraphrasing Socrates, said, "The unexamined life is not worth living. The unexamined university is not worth having" (Gwaltney, 1988, p. A-28). Likewise, an unexamined discipline may not last. Let us be sure that we recognize our heritage in science as it pertains to society and science as applied to agriculture. Then, let us turn to our mission as a discipline: to further the scientific study of the methods and principles of teaching and learning as they are appropriate for teaching subjects in agriculture. To do less will lead to the demise of the discipline called agricultural education.

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